Amendment of Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) Apparatus for simultaneously making electrical contact with an array of spherical contact points having a first selected pattern on a circuit, comprising:

a support substrate having a working surface and a back side, said support substrate defining a multiplicity of apertures extending from said backside through said substrate and terminating at said working surface according to a second selected pattern corresponding to a mirror image of said first selected pattern;

a multiplicity of conductive probes, said conductive probes extending from a first end at said back side of said support substrate, through said apertures to a contact end located a selected distance beyond said working surface wherein said contact ends of said conductive probes are substantially flat;

at least one aperture of said multiplicity of apertures including at least two conductive probes extending there-through;

a multiplicity of conductive pathways extending from said first end of said conductive probes to selected circuitry; and

said conductive probes positioned through said support substrate to make electrical contact with the spherical contact points on a circuit placed against said apparatus.

2. (original) The apparatus of Claim 1 wherein said conductive probes have a footprint at least as large as the solder ball diameter.

3. (original) The apparatus of Claim 1 wherein said contact points are conductive bumps or balls.

4. (original) The apparatus of Claim 1 wherein said at least two conductive probes extending through said at least one aperture are connected one each to a voltage source line and a voltage sensing device.

5. (currently amended) The apparatus of Claim 4 further including a third conductive probe connected to another voltage source.

6. (original) The apparatus of Claim 1 wherein said apparatus is a probe card for testing integrated circuits.

7. (currently amended) Apparatus for simultaneously making electrical contact with an array of spherical contact points positioned according to a first selected pattern on a circuit comprising:

an insulating support substrate having a working surface and a back side;

a multiplicity of conductive probes, each of said conductive probes extending from a first end at said backside of said substrate, through said substrate to a contact end, contact ends of said multiplicity of conductive probes extending a selected distance beyond said working surface and terminating at a multiplicity of locations arranged according to a second selected pattern corresponding to a mirror image of said first selected pattern and wherein said contact ends of said conductive probes are substantially flat;

at least two conductive probes of said multiplicity of conductive probes having their ends adjacent each other at a single one of said multiplicity of locations; and

said contact ends of said conductive probes positioned through said support substrate to make electrical contact with selected ones of said spherical contact points on a circuit placed against said apparatus.

8. (original) The apparatus of Claim 7 wherein at least two of said multiplicity of locations include at least two of said conductive probes.

9. (original) The apparatus of Claim 7 wherein at least two of said multiplicity of locations include at least three of said conductive probes.

10. (original) The apparatus of Claim 7 wherein said apparatus is a probe card for testing integrated circuits.

11. (currently amended) A method of manufacturing apparatus for simultaneously making electrical contact with an array of spherical contact points on circuitry, said array of contact points positioned according to a first selected pattern, comprising the steps of:

providing a support substrate having a working surface and a backside;

defining a multiplicity of apertures extending from said backside through said substrate and terminating at said working surface according to a second selected pattern, said second selected pattern corresponding to a mirror image of said first selected pattern;

extending a multiplicity of first conductive probes through said multiplicity of apertures such that a first end is at said back side and a contact end extends a selected distance beyond said working surface;

extending a second conductive probe having a first end and a contact end through at least one of said multiplicity of apertures; and

positioning said multiplicity of apertures such that said contact ends of said first conductive probes and said second conductive probes are aligned to make electrical contact with at least a portion of said array of spherical contact points of a circuit placed against said apparatus and wherein said contact end of said first conductive probes and said second conductive probes are substantially flat.

12. (previously amended) The method of Claim 11 further comprising the steps of placing circuitry having an array of contact points against said apparatus and testing said circuitry.

13. (original) The method of claim 11 wherein a selected probe of said multiplicity of first conductive probes is for supplying a selected voltage and said second conductive probe adjacent said selected probe is for sensing a voltage.

14. (previously amended) A method of manufacturing apparatus for simultaneously making electrical contact with an array of spherical contact points on circuits, having said array of contact points positioned according to a first selected pattern, comprising the steps of:

providing a support substrate having a backside and a working surface;

extending a multiplicity of first conductive probes through said support substrate, each of said first conductive probes extending from a first end at said backside of said substrate, through said substrate to a contact end, said contact ends of said conductive probes extending a selected distance beyond said working surface and terminating at a multiplicity of locations according to a second selected pattern corresponding to a mirror image of said first selected pattern;

extending at least one second conductive probe having a first end and a contact end through said substrate, said contact end of said at least one second conductive probe terminating adjacent the contact end of one of said multiplicity of first conductive probes; and

positioning said first conductive probes and said second conductive probe such that said contact ends of said first conductive probes and said second conductive probe are aligned so as to make electrical contact with said array of spherical contact points of a circuit placed against said apparatus and wherein said contact ends of said first and second conductive probes are substantially flat.

15. (previously amended) The method of Claim 14 further comprising the steps of placing circuitry having an array of contact points against said apparatus and testing said circuitry.

16. (original) The method of claim 14 wherein a selected probe of said multiplicity of first conductive probes is for supplying a selected voltage and said second conductive probe adjacent said selected probe is for sensing voltage.

17-22 (cancelled)

23. (added previously) The apparatus of Claim 7 wherein said conductive probes have a footprint at least as large as the solder ball diameter.

24. (added previously) The apparatus of Claim 7 wherein said conductive probes have a footprint approximately as large as the solder ball diameter.

25. (added previously) The method of Claim 11 wherein said conductive probes have a footprint at least as large as the solder ball diameter.

26. (added previously) The method of Claim 11 wherein said conductive probes have a footprint approximately as large as the solder ball diameter

27. (added previously) The method of Claim 14 wherein said conductive probes have a footprint at least as large as the solder ball diameter.

28. (added previously) The method of Claim 14 wherein said conductive probes have a footprint approximately as large as the solder ball diameter